

Technical Report 867

Measuring Leadership, Motivation, and Cohesion Among U.S. Army Soldiers

Fred A. Mael

U.S. Army Research Institute

December 1989

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<p>The purpose of this project was to develop measurement scales to use in determining and predicting small-unit effectiveness, as measured by success in simulated-combat exercises. The relative impact of cohesion, motivation, and leader performance were of particular interest. The need for concise, psychometrically sound, and military-relevant measurement of these constructs provided the impetus for the development and validation of these measures.</p> <p>In 1988, measurement scales were developed for the following constructs: platoon cohesion, job involvement motivation, identification with the Army, and two aspects of leadership: initiating structure and consideration. An initial questionnaire was administered in early 1989 to 252 platoon members and leaders. Means, standard deviations, internal consistency estimates, and scale factorial compositions were analyzed. After researchers used the results to rework the scales, they administered the (Continued)</p>					
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questionnaire at a second site with 474 platoon members and leaders. The second administration also included measures of leader peer cohesion, field-exercise motivation, and the following aspects of leadership: participative leadership style, "boss stress," and leader upward influence. The measures were evaluated using the same psychometric method used to evaluate the first administration.

The data justified the use of the scales. Reliability estimates were virtually all satisfactory. Factor analysis revealed 11 one-dimensional scales or subscales. The scales were considerably shorter than analogous scales used in civilian organizational research and achieved satisfactory face validity. (C)

**Measuring Leadership, Motivation, and
Cohesion Among U.S. Army Soldiers**

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FOREWORD

A primary objective of Research Task 3406 of the U.S. Army Research Institute for the Behavioral and Social Sciences is to improve the performance of Army units through enhancements to leadership, cohesion, and soldier commitment.

To accomplish this objective, it is necessary to develop measures of leadership, cohesion, and soldier commitment that exhibit satisfactory levels of statistical reliability and possess sufficient aspects of validity to warrant their use. The purpose of this report is to examine the psychometric properties of a set of attitude/opinion scales, including reliability estimates and factorial composition, that measure aspects of leadership, cohesion, and soldier commitment. Follow-on reports will address the extent to which these measures predict subsequent unit performance and how changes in the way leaders behave toward their subordinates can alter the performance of those units.

This research effort is part of a larger program sponsored by the Center for Army Leadership and based on requirements identified in a Memorandum of Agreement between the U.S. Army Command and General Staff College and the U.S. Army Research Institute for the Behavioral and Social Sciences dated April 23, 1987.

The results of this phase of the research indicate that the measures of leadership, cohesion, and soldier commitment exhibit satisfactory levels of reliability and should be used in subsequent research phases. The research branch of the Center for Army Leadership has reviewed this report and supports its publication. Researchers conducting inquiries into leadership, cohesion, and soldier commitment are seen as the primary targets of this report.



EDGAR M. JOHNSON
Technical Director

ACKNOWLEDGMENTS

This report is the direct result of the combined efforts of the members of the Leadership and Motivation Technical Area (LMTA) of the U.S. Army Research Institute for the Behavioral and Social Sciences, under the direction of Dr. Robert Holz. Development of the measurement scales, administration of the surveys, post-rotation interviews, and scale refinement were performed by Drs. Nehama Babin, Laurel Oliver, Joel Savell, Guy Siebold, Alma Steinberg, Nora Stewart, Trueman Tremble, and Paul Twohig. Dr. Twohig also provided statistical advice and helped develop the analysis plan. Drs. Siebold and Tremble provided initial reviews of the paper, and their many useful suggestions have been incorporated. The clerical support provided by Vera Perry and Kathy Williams is also greatly appreciated. Additional thanks must go to Jack Sternberg, Tracye Julien, and our military contacts at the two battalions, who must remain anonymous.

MEASURING LEADERSHIP, MOTIVATION, AND COHESION AMONG U.S. ARMY SOLDIERS

EXECUTIVE SUMMARY

Requirement:

The U.S. Army is attempting to identify the determinants of small-unit effectiveness, as measured by success in simulated-combat exercises. The relative impact of cohesion, motivation, and leader performance on unit effectiveness are of particular interest. The need for concise, psychometrically sound, and military-relevant measurement of these constructs provides the impetus for the development and validation of such measures.

Procedure:

In 1988, measurement scales were developed for the following constructs: platoon cohesion, job involvement motivation, identification with the Army, and two aspects of leadership: initiating structure and consideration. An initial questionnaire was administered in early 1989 to 252 platoon members and leaders. Means, standard deviations, internal consistency estimates, and scale factorial compositions were analyzed. The results were utilized for reworking of the scales and readministration at a second site with 474 platoon members and leaders. The second administration also included measures of leader peer cohesion, field-exercise motivation, and the following aspects of leadership: participative leadership style, "boss stress," and leader upward influence. The measures were again evaluated subsequent to the second administration.

Results:

The data justified the use of the scales. Reliability estimates were virtually all satisfactory. Factor analysis revealed 11 one-dimensional scales or subscales. The scales were all considerably shorter than analogous scales used in organizational research and achieved satisfactory face validity.

Utilization of Findings:

This research provides measurement scales in the areas of cohesion, motivation, and leadership that are immediately usable

in the programmatic study of determinants of small-unit effectiveness.

MEASURING LEADERSHIP, MOTIVATION, AND COHESION AMONG U.S. ARMY SOLDIERS

CONTENTS

	Page
OVERVIEW	1
RATIONALE FOR THE DETERMINANTS MODEL	2
The CTC Opportunity	3
INSTRUMENT DEVELOPMENT	4
Initial Scale Development	4
First Empirical Test and Revisions	5
Second Empirical Test	6
COHESION	6
I. Horizontal Squad Member Cohesion	6
II. Horizontal Leader Cohesion	10
SOLDIER MOTIVATION	11
ORGANIZATIONAL IDENTIFICATION	15
LEADERSHIP SCALES	19
I. Initiating Structure	20
II. Consideration	21
III. Participative Leadership	27
IV. Boss Stress	31
V. Upward Influence	32
CONCLUSION	34
REFERENCES	37

LIST OF TABLES

Table 1. Cohesion scales and statistics	8
2. Soldier motivation scales and statistics	13

CONTENTS (Continued)

	Page
Table 3. Organizational identification scale and statistics	17
4. Leadership: I. Initiating structure scale and statistics	22
5. Leadership: II. Consideration scale and statistics	25
6. Leadership: III. Participative leadership scales and statistics	29
7. Leadership: IV. Boss stress scales and statistics	33
8. Leadership: V. Upward influence scale and references	35

MEASURING LEADERSHIP, MOTIVATION, AND COHESION AMONG U.S. ARMY SOLDIERS

OVERVIEW

This report describes measurement scales developed for use in a program of research on the determinants of small-unit performance. The Leadership and Motivation Technical Area (LMTA) of the Army Research Institute (ARI) was assigned responsibility for the design and validation of questionnaire scales in the areas of leadership, motivation, and cohesion. These measures, when combined with demographic, training management, and training resources items, will form a coherent series of questionnaires covering the domain of expected performance determinants. Responses on these measures are to be compared with performance at the U.S. Army's Combat Training Centers (CTCs), as measured by CTC observer-controller evaluations and post-rotation participant assessments. The ultimate goals are a) to accurately determine factors leading to enhanced small-unit performance in a simulated battle environment, and b) to provide suggestions and develop programs that will improve those dimensions (e.g., motivation, training, etc.) identified as crucial to successful performance.

Toward this end, LMTA has developed measurement scales that had to satisfy a number of criteria. First, the scales had to have sound psychometric properties, including satisfactory reliability, clear factorial structure, and the capacity for meaningful variance among the scores. Second, because of the number of variables in the determinants model, the scales needed to be more concise than other existing measures of the same constructs. Third, most current measures of the constructs were originally developed by social or industrial/organizational psychologists and sociologists in civilian and private sector work settings. Their measures had to be redefined or reworded in order to be applicable to small units in a military setting. Finally, the items and scales had to achieve "face validity" in order to gain acceptance by military respondents.

This report is organized into several sections. The next section discusses the rationale for the research program. Next, the two pilot administrations of the scales are described. In the later sections, each construct is discussed separately, focusing on the rationale for its inclusion, the basis for its current operationalization, and its scale properties. These include the number of items, their sources, evidence for reliability, and factorial structure. In addition, means and standard deviations are compared for respondents at different levels (squad members, squad leaders, platoon sergeants, and platoon leaders). Finally, analysis of variance is performed to determine which constructs

clearly differentiate among platoons. The relationship of the constructs to each other, to the demographic and training items, or to criteria of successful performance are beyond the scope of the current report.

RATIONALE FOR THE DETERMINANTS MODEL

The determinants model of unit effectiveness seeks to explicate those dimensions which differentiate high-performing units from less effective ones. Conversely, the model seeks to highlight those areas in which less effective units are most deficient. The model is also notable for its focus on the human elements of military effectiveness. Consistent downplaying of human aspects of warfare relative to more measurable or high-tech aspects has been lamented by Luttwak (1985):

There are the classic human intangibles of war: leadership, group cohesion, and individual morale...What is extraordinary about the habitual neglect of all these intangibles by the American military establishment is merely that it persists virtually unremarked, notwithstanding all the failures in war that the gross overemphasis on material inputs has caused ever since Korea, and in spite of the most basic lessons that can be extracted from military history. (pp.143-145).

Because of this emphasis on the human dimension, the model draws on previous theoretical work in the area of organizational analysis. In this section, previously stated models, especially those with a military orientation, provide a useful starting point and supportive rationale for the determinants model.

Katz and Kahn (1978) discuss organizational diagnosis and change from three perspectives: the individual, the workgroup, and the organization. Improvement in individual performance is achieved through selection of qualified persons, training of current incumbents, and socialization of all members in organizational values and perspectives. Improvement in group performance is accomplished by fostering positive group cohesion and reinforcing cooperation and teamwork. At the organizational level, wise policy decisions, equitable implementation of policy, and meritocratic avenues for career progression can all improve organizational climate. Thus, a comprehensive model of unit effectiveness must take into account a) the capabilities of individual members, b) the capacity of the individuals to function as a unit, and c) the organizational context and climate within which the unit is embedded. The leadership function clearly cuts across all three levels of analysis. Leaders guide and train individuals and make administrative decisions about their careers; infuse their units with the desire to function cohesively; and set the policy and the tone for the larger organization.

In an elaborate model applied specifically to a military context, Tosi (1985) describes the seven factors which determine predictable behavior patterns composing the "organizational control structure":

1. **Formalization**, involving quantity and nature of rules and policies.
2. **Technology**, defining the individual skills and degree of interpersonal coordination needed for the work.
3. **Socialization**, the inculcation of organizational norms, values, and aspirations.
4. **Selection**, the basis for all decisions of initial inclusion in the organization, and subsequent promotion, retention, or termination decisions.
5. **Reward systems**, including use of both positive (pay and promotion) and negative inducements.
6. **Work relationships**, as reflected in opportunities for cooperation and affective bonding with others.
7. **Leadership**, the organizationally desirable influence exerted by higher-level persons upon others.

Not all Tosi's (1985) factors are equally applicable to the current research program. **Formalization, technology, and reward systems** should be expected to be similar across the platoons of a given battalion or brigade. (Variations in the application of these factors would be subsumed under leadership differences.) The other four factors encompass the variables of the determinants model. The **work relationships** factor is the domain of platoon stability, platoon cohesion, leader peer cohesion, and vertical bonding between leaders and platoon members. The **socialization** factor includes motivation to work hard for both overall and specific Army goals and identification with the U.S. Army as a whole. The **leadership** factor encompasses leader style, leader qualities, and all forms of individual- and group-oriented attempts at influence, direction, and guidance. Finally, the **selection** factor involves the recruitment, selection, and retention of soldiers who are intelligent, knowledgeable, and physically fit. The training function, including all manpower and material resources dedicated to individual and group training, involves a synthesis of the technology, socialization, and leadership factors. Thus, the determinants model can be subsumed under the more general rubric of the Tosi (1985) model. The specific components of cohesion, motivation, and leadership included have been drawn from primary sources and are discussed in their specific sections.

The CTC Opportunity

Numerous previous studies have addressed the relationship between the aforementioned factors and unit performance. The unique gain anticipated from the determinants program lies in the criterion measure. The program capitalizes on data from highly

realistic simulations of combat at the CTCs. Evaluation of platoon performance comes from the objective assessments of observer-controllers stationed at the CTCs. The principal objectives of the program are a) to describe units prior to deployment from their home stations with respect to the aforementioned factors, and b) to identify those factors associated with unit effectiveness at the CTCs. The program's design calls for multiple data collections prior to deployment, paying special attention to changes occurring subsequent to CTC trainup and actual deployment.

While the model includes numerous ostensibly distinct variables, the variables are surely not mutually exclusive. Rather, cyclical and reciprocal relationships exist between most of these constructs. For many researchers, leadership, cohesion and motivation are so interdependent as to be inseparable. Thus, for Henderson (1985), Siebold (1987), and other military researchers, "cohesion" encompasses peer cohesion, leadership (hierarchical/vertical cohesion), organizational identification, the motivation to perform productively, and unit effectiveness. Though Butler, Blair, Philips and Schmitt (1987) choose to retain narrower construct definitions, they agree that a single umbrella concept (termed "organizational synergy") is needed to reflect the additive and multiplicative relationships between the variables. It should thus be reiterated that while this report discusses the psychometric properties of each variable scale in isolation, the constructs are to be used as part of a coherent total framework: the determinants model of unit effectiveness.

INSTRUMENT DEVELOPMENT

Initial Scale Development

LMTA was charged with development of four approximately equivalent questionnaires during the latter part of 1988. The core questionnaire was designed for squad members, with variant forms for squad leaders, platoon sergeants, and platoon leaders. Differences between the forms involved a) inclusion or exclusion of certain scales, and b) changes in focal object of evaluation, such as which leader was to be evaluated and whether evaluation was of the person's squad or platoon. However, each scale in all forms contained the same number of items per scale.

At the time of initial instrument development, access to the desired criterion measure (observer-controller ratings at the CTCs) was not assured, nor was it clear whether the "small unit" under consideration would be the squad, the platoon, or both. Consequently, parallel scales were used to assess both squad and platoon cohesion, and squad and platoon effectiveness. Also, because fewer constructs were under consideration at that time, there were some opportunities for leaders to evaluate both themselves and their unit (squad or platoon) on the same variable

(e.g. job involvement, organizational identification). Decisions about inclusion of leadership, cohesion, and motivation variables were based primarily on the leadership model of Blades (1986).

First Empirical Test and Revisions

The first empirical test of the scales was in early 1989 with a battalion at a northern post (henceforth referred to as "Battalion A"). A total of 252 usable questionnaires were completed in the presence of LMTA researchers. This total included 195 squad members (including team leaders), 37 squad leaders, 11 platoon sergeants, and nine platoon leaders. The respondents were members of both line and headquarters platoons. For some analyses, it was necessary to aggregate individual platoon member scores and derive a single averaged platoon score on each variable. It was decided that scores from a platoon without a minimum of five respondents could not be considered as platoon-wide attitudes, and would be used for aggregated analyses. Thirteen platoons satisfied this requirement and were retained for platoon-level analysis.

Preliminary analysis was performed on the data with a specific emphasis on scale variance, internal consistency (alpha coefficients), and factorial dimensionality. The results were combined with a reexamination of the literature to provide a basis for reevaluation of the scales. Some of the scales were extended or reformulated.

Other changes in the research program were made after the Battalion A administration as well. Additional leadership factors (boss stress, position power) in addition to those cited by Blades (1986) were included to reflect the research of Fiedler and Garcia (1987). Cohesion among leaders (Siebold 1987), CTC-oriented motivation, training management and training resources items were also included, reflecting the comprehensive determinants model. Inclusion of these additional scales required the omission of some of the multiple-source measures used with Battalion A.

Subsequent to the Battalion A administration, it was determined that the platoon was the lowest level at which a valid criterion measure of unit performance could be derived at the CTCs. This led to the decision to discontinue further investigation of squad-level phenomena, and concentrate solely on the platoon as "the small unit." Unfortunately, this reduced the potential sample size of units from each rotation to a statistically untenable minimum. This in turn required an even greater commitment to a series of data collections over multiple rotations, and the combination of data across rotations. Nevertheless, significant relationships between predictor set variables could still be amenable to squad and individual-level analysis on a rotation by rotation basis.

Second Empirical Test

The second questionnaire administration took place seven weeks after the first. The members of a battalion at a southern post (henceforth known as "Battalion B") filled out questionnaires in the presence of LMTA researchers. A total of 474 usable questionnaires was collected from the soldiers. These included 375 squad members, 65 squad leaders, twenty platoon sergeants, and 14 platoon leaders. For platoon level analysis, 18 platoons had sufficient respondents to be treated as platoons. After the Battalion B administration, the scales were once again evaluated for variance, internal consistency, and factorial structure.

The items and scales retained after both administrations appear in Tables 1-8. These tables are described in the next sections, in which each construct and the psychometric properties of its scale are discussed.

COHESION

I. Horizontal Squad Member Cohesion

Conceptual background. The attachment and bonding of soldiers to the members of their units has long been assumed an important factor in unit success and survival (Janowitz & Shils, 1948). However, a consensus has not been reached as to the definition and measurement of cohesion (Bednar & Kaul, 1978). For the current research effort, the following approach is followed:

(a) Each soldier is asked to assess the platoon's level of cohesion as a whole ("the soldiers in my platoon really care about each other") rather than his own personal feelings of attachment, liking, or desire to remain in the group. The former approach is preferred because unit cohesion is considered an indicator of group climate and not merely the average of each person's attitudes towards the unit. However, in order to measure cohesion in this fashion, it must be presumed that members' perceptions of unit cohesiveness reflect social reality, rather than projections of their individual experiences onto the platoon as a whole.

(b) A middle position is adopted between the most narrow (Piper, Marrache, Lacroix, Richardsen, & Jones, 1983) and most general (Henderson, 1985) current definitions of cohesion. Following the work of Siebold (1987), the current measure includes both affective (trust, care) and instrumental (cooperative teamwork) components. However, instrumental success is limited to the ability of the unit members to work together for the unit's goals. No presumption is made that cohesion necessarily involves or leads to organizationally desirable behavior and

performance. In fact, it is recognized that small-unit cohesion may be marshalled to thwart organizational purposes (Little, 1964; Butler et al., 1987).

(c) Cohesion in the military has been defined as a multidimensional construct encompassing peer, leader and organizational bonding (Henderson, 1985; Siebold, 1987). Nevertheless, for the measurement of cohesion in the current program, the concept is separated into sub-dimensions, and the term "cohesion" is limited to the horizontal cohesion of peers within the unit and the horizontal cohesion of the unit's leadership. The peer cohesion scale is described in this section. Leader horizontal cohesion is measured with a parallel but separate scale and is described in the next section. Peer cohesion is applicable only to units in which the members have consistent face-to-face interactions with each other, and the potential for development of affective and instrumental relationships. In the Army, this would limit peer cohesion to the squad or platoon (Siebold & Kelly, 1988). Thus, the attachment between individuals and larger entities, whether company, battalion, brigade, or the Army as a whole, described as "organizational bonding" (Siebold & Kelly, 1988), is measured under the rubric of organizational identification. Finally, so-called "vertical bonding" (Siebold & Kelly, 1988) between unit members and a hierarchical superior (squad leader, platoon sergeant, platoon leader, etc.) can be subsumed under the measurement of leadership, especially from the viewpoint of the Leader-Member Exchange Model (Dansereau, Graen, & Haga, 1973).

Scale composition and properties. Based on the aforementioned definition of peer cohesion, a five-item scale was developed and used at the initial administration with Battalion A. Based on that administration, one item was dropped, and two additional items were added. The six-item scale in Table 1 was utilized at Battalion B. Two of the items were taken directly from the Combat Platoon Cohesion Questionnaire (CPCQ; Siebold & Kelly, 1988). One item was taken from the organizational climate scales of James & Jones (1979). Three items were written specifically for the current research effort. Item anchors for the cohesion, motivation, and organizational identification scales ranged from strongly agree to strongly disagree. A five-point Likert-type scale was used, with 5 signifying the highest score and 1 the lowest.

The scale was administered to each Battalion A squad member regarding his squad's cohesion and his platoon's cohesion; to squad leaders regarding their squad members' cohesion; and to platoon sergeants and platoon leaders regarding the cohesion of their platoon members. At Battalion B, the scale was administered only to squad members regarding their platoon cohesion. The means and standard deviations for each administration appear in Table 1. Reliability estimates using

Table 1

Cohesion Scales and Statistics

I. Horizontal Squad Member Cohesion

- 1 The soldiers in my platoon really care about each other.
- 2 The soldiers in my platoon work well together as a team.
- 3 The soldiers in my platoon hang out together.
- 4 Platoon members work together to get the job done.
- 5 Squad members in this platoon trust each other.
- 6 When I face a difficult task, other members of my platoon help out.

II. Horizontal Leader Cohesion

- 1 The leaders in this platoon trust each other.
- 2 The leaders in this platoon really care about each other.
- 3 The leaders in this platoon work together to get the job done.
- 4 The leaders of this platoon do not get along with each other. (R)

Descriptive Statistics

Sample sizes:

	Battalion A	Battalion B
Squad Members(SM)	SM=195	SM=375
Squad Leaders(SL)	SL= 37	SL= 65
Platoon Sergeants(PS)	PS= 11	PS= 20
Platoon Leaders(PL)	PL= 09	PL= 14
Platoons	13	18

<u>Variable</u>	<u>Sample</u>	<u>Mean</u>	<u>SD</u>	<u>Alpha</u>
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Horizontal squad member cohesion

Battalion A:

Squad cohesion	SM	3.62	.73	.72
	SL	3.90	.86	.89
Platoon cohesion	SM	3.53	.69	.76
	PS	4.26	.52	---
	PL	4.62	.29	---

Battalion B:

Platoon cohesion	SM	3.53	.83	.85
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(cont)

Table 1 (cont)

<u>Variable</u>	<u>Sample</u>	<u>Mean</u>	<u>SD</u>	<u>Alpha</u>
<u>Horizontal leader cohesion</u>				
Battalion B:	SM	3.24	.93	.86
	SL	3.60	.85	.84
	PS	4.50	.56	---
	PL	4.16	.84	---

Analysis of variance: Difference between platoons

<u>Variable</u>	<u>Sample</u>	<u>Analysis of variance</u>
Battalion A:		
Squad cohesion	SM	$F_{(12,157)} = 1.72$, ns $p < .07$
Platoon cohesion	SM	$F_{(13,65)} = 2.76$, $p < .002$
Battalion B:		
Platoon cohesion	SM	$F_{(59,175)} = 6.64$, $p < .001$
Horizontal leader bonding	SM	$F_{(54,250)} = 3.17$, $p < .001$

coefficient alpha, which were computed only for squad members and squad leaders because of sample size requirements, also appear in Table 1. It can be seen that the alpha coefficient for the most recent version was .85.

In addition, the items of the scale were factor analyzed in the three instances in which there was a sufficient sample size: Battalion A squad members evaluating squad cohesion; Battalion A squad members evaluating platoon cohesion; and Battalion B squad members evaluating platoon cohesion. In each case, both the eigenvalue >1 and the scree test methods demonstrated that the squad member cohesion measure was best represented by a single factor.

Analysis of the responses from the different subgroups in Battalion A showed that the soldiers rated their own platoon cohesion less favorably (mean 3.53) than did either their platoon leaders (4.62) or platoon sergeants (4.26). They also rated their squad cohesion (mean 3.62) lower than did their squad leaders (mean 3.90). The squad and platoon leaders in Battalion B were not asked to evaluate the cohesion of their subordinate unit.

In a comparison of squad member responses by platoon, analysis of variance demonstrated a significant between-platoon difference in self-reported cohesion, both at Battalion A and Battalion B. However, between-squad differences in cohesion, which were measured in Battalion A only, were not significant. The analysis of variance data appear in Table 1.

II. Horizontal Leader Cohesion

Conceptual background. Based on interviews and a survey of the literature, Siebold and Kelly (1988) concluded that the ability of squad leaders, platoon sergeants and platoon leaders to work together and get along with each other is crucial to the functioning of the platoon as a whole. Others have presented empirical or anecdotal support for this view (Malone, 1988; Nelson, 1964). Competition, friction, and second-guessing among the platoon leadership which are visible to the soldiers of the platoon could be expected to lower cohesion among platoon members, especially if the soldiers feel compelled to form factions and take sides. For the present research program, leader horizontal cohesion was viewed as comprising affective and instrumental/teamwork components, similar to horizontal squad member cohesion.

Scale composition and properties. A four-item scale measuring horizontal leader cohesion was developed, using three items from the Horizontal Bonding Affective Leader subscale of the Combat Platoon Cohesion Questionnaire (Siebold & Kelly, 1988), and one additional item. It was administered (at

Battalion B only) to squad members regarding their leaders and to squad leaders, platoon sergeants and platoon leaders regarding their own leadership cadre. The means, standard deviations, and reliability estimates for each administration appear in Table 1. The alpha coefficient for the scale was .86 for squad members and .84 for squad leaders. Factor analysis based on administration of the scale to the Battalion B squad members revealed a single factor.

There was a lack of consensus between the soldiers at different levels in the platoon regarding the cohesion among their platoon's leadership. Squad members had the lowest assessment of their leaders' cohesion (mean of 3.24 on a scale of 1 to 5), followed by the squad leaders (3.60). The platoon sergeants as a group rated the cohesion among leaders in their platoons as very high (4.50), followed by platoon leaders (4.16). This is similar to the findings regarding soldier peer cohesion in Battalion A, in that the squad member ratings were less favorable (mean 3.53) than those by either their platoon leaders (4.62) or platoon sergeants (4.26).

From the perspective of the squad members, analysis of variance (shown in Table 1) demonstrated a significant difference between platoons in the perceived horizontal cohesion of their leaders.

SOLDIER MOTIVATION

Conceptual background

In addition to the influence of the unit, the motivational level of each individual soldier who makes up the unit is seen as an important determinant of unit performance. Two aspects of soldier motivation are measured as a part of this research. The first is the extent to which the soldier is psychologically involved in Army work and sees it as a means to achieve personal goals and ambitions. This component is derived from the motivation and job involvement research of Lodahl and Kejner (1965) and Hackman and Oldham (1975). Whether because of differences in personal work ethic, initial reason for enlisting, or other reasons, individual soldiers could be expected to differ in their military job involvement.

The second aspect draws from organizational research on the effect of specific goals on the arousal and maintenance of motivation. Two prominent theories in this area are Expectancy (VIE) theory (Vroom, 1964) and Goal-setting theory (Locke, Shaw, Saari & Latham, 1981). Rather than postulating an all-inclusive involved or apathetic work orientation, these theories focus on the feasibility of specific task accomplishment, the optimal difficulty level of goals, and the likelihood of attaining desired outcomes. Both theories have received moderate to strong

empirical support (Ilgen & Klein, 1988; Muchinsky, 1983). In the current research, the focus is on the extent to which soldiers are specifically motivated to prepare for and perform well at the JRTC maneuvers.

It should be noted that other theories of individual motivation, such as need theory and intrinsic motivation theory, may be inappropriate to the work-role of the soldier. The reasons include the following: a) unlike much civilian work, performance as a soldier may not have a direct link to a prospective long-term career; b) the possibility for extraordinary individual or unit performance during peacetime may be circumscribed; and c) for those soldiers whose primary motivation to serve in the Army is instrumental (vocational training or a means to college funding), there may be no intrinsic motivation or need satisfaction in the mundane day-to-day requirements of the soldier's role. On the other hand, the CTC experience provides a simulated "work-sample" of preparation for and participation in real battle and, as such, can reveal individual differences in focused motivation.

Scale composition and properties

Two individual scales were developed to measure the aforementioned components of motivation. The job involvement scale used with Battalion A contained three items. Based on a reevaluation of the literature, the scale was reformulated for the Battalion B administration. Unfortunately, the scale items used with Battalion B demonstrated unsatisfactory internal consistency. This will necessitate inclusion of a fourth item (shown in Table 2) in future uses of the scale. It should be noted that the items were taken primarily from the six-item form of the Lodahl and Kejner (1965) job involvement scale which has also demonstrated mediocre internal consistency.

The job involvement portion of the scale was administered to Battalion A squad members regarding their own job involvement; to squad leaders regarding their own and their squad member's motivation; and to platoon sergeants and platoon leaders regarding the motivation of their platoon members. At Battalion B, the job involvement scale was administered to all four levels regarding their own job involvement.

A second, three-item scale developed to measure motivation to perform well at CTC was administered in Battalion B. At Battalion B, the CTC motivation scale was administered to all four levels. Item anchors and scale values (5=highest, 1=lowest) were the same as the cohesion scales.

The means, standard deviations, and reliability estimates for each administration appear in Table 2. Factor analysis of all items from both motivation scales revealed two identifiable

Table 2

Soldier Motivation Scales and Statistics

I. Job Involvement

- 1 My job helps me to achieve my personal goals.
- 2 I avoid taking on extra duties and responsibilities in my work with my unit.(R)
- 3 I used to be more ambitious about my work than I am now.(R)
- 4 I look forward to coming to work every day.

II. CTC Motivation

- 1 It really matters to me that we do well at the CTC.
- 2 I put in extra effort to prepare for the CTC.
- 3 I really don't care about how I perform at the CTC.(R)

Descriptive Statistics

Sample sizes:

	Battalion A	Battalion B
Squad Members(SM)	SM=195	SM=375
Squad Leaders(SL)	SL= 37	SL= 65
Platoon Sergeants(PS)	PS= 11	PS= 20
Platoon Leaders(PL)	PL= 09	PL= 14
Platoons	13	18

<u>Variable</u>	<u>Sample</u>	<u>Mean</u>	<u>SD</u>	<u>Alpha</u>
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Job involvement

Battalion A:

Self	SM	2.95	1.02	.77
Self	SL	3.18	1.02	.76

Battalion B:

Self	SM	3.04	.98	.62
Self	SL	3.62	.84	.44
Self	PS	3.81	.81	---
Self	PL	3.98	.64	---

JRTC Motivation

Battalion B:

SM	3.66	.90	.73
SL	3.95	1.00	.90
PS	4.32	.72	---
PL	4.58	.42	---

(cont)

Table 2 (cont)

Analysis of variance: Difference between platoons

<u>Variable</u>	<u>Sample</u>	<u>Analysis of variance</u>
Battalion A: Job involvement	SM	$F_{(12,157)} = .95$ ns
Battalion B: Job involvement	SM	$F_{(17,335)} = 1.38$ ns
CTC motivation	SM	$F_{(17,335)} = 1.89$, $p < .05$

factors which corresponded to the a priori job involvement-JRTC motivation split. Thus, in spite of the moderately high intercorrelation ($r = .49$ and $.54$ for squad members and squad leaders, respectively) between job involvement and CTC goal-motivation, it is appropriate to treat them as separate scales.

In Battalion B, the average rating by platoon leaders of both their own job involvement and JRTC goal-oriented motivation was higher than that of platoon sergeants. Both were in turn higher than the average self-ratings of squad leaders, and all three were noticeably higher than those of squad members. In the Battalion A administration, squad leaders were asked to rate both their own and their squad's motivation, while the platoon sergeants and platoon leaders were asked to rate only the motivation of their respective platoons. Consistent with previously mentioned findings regarding the cohesion scales, both the platoon sergeants and platoon leaders rated their squad members' motivation higher than the squad members rated themselves. However, contrary to the cohesion data, the squad leaders at Battalion A rated squad motivation lower than the squad members did. They did, however, rate their own personal motivation higher than that of their subordinates.

The mean scores of platoons on both motivational indices were compared using analysis of variance (Table 2). In both Battalion A and Battalion B, there was no significant between-platoon difference in job involvement. By contrast, there was a significant difference between platoons on CTC goal-motivation. A possible explanation is that individual values and attitudes which may contribute to differences in job involvement motivation could be resistant to platoon-wide leader or group influence. By contrast, motivation to expend effort on a specific, unit-wide goal such as performance at CTC should be more susceptible to those influences. Thus, between-platoon differences could be expected to be more appreciable than within-platoon variance.

ORGANIZATIONAL IDENTIFICATION

Conceptual background

In addition to a soldier's personal motivation and his bond with his primary unit, another important incentive to persevere under duress and fight courageously should be loyalty and allegiance to the Army as a whole, referred to as organizational identification. Segal (1985) has in fact faulted post-World War II military sociology for focusing exclusively on primary group dynamics (e.g. cohesion) and ignoring patriotism, latent national ideology, and attachment to secondary symbols. In the current determinants model, that omission is corrected by the inclusion of organizational identification.

Organizational identification is a subset of the more general concept of identification with a psychological group (Tajfel, 1982; Turner, 1984). To identify with a group or organization is to perceive one's self as psychologically intertwined with the fate of the group and to personally experience the group's successes and failures as one's own (Ashforth & Mael, 1989; Kelman, 1961; Tolman, 1943). It is a perceptual-cognitive construct not synonymous with positive affect or pro-organizational behaviors (Foote, 1951). It is thus applicable to a group no matter how large or amorphous, regardless of whether the group "members" have interaction with, much less affection for, each other. Thus, while cohesion as currently operationalized is appropriate primarily to the squad or platoon (Siebold & Kelly, 1988), identification would be applicable to the company, battalion, or brigade, as well as to the Army as a whole. Identification is conceptually and empirically distinct from the concept of organizational commitment (Mael & Ashforth, 1988). Organizational commitment, as commonly measured by the Organizational Commitment Questionnaire (OCQ; Mowday, Steers & Porter, 1979) includes expected outcomes of identification such as intent to expend effort for and remain with the organization.

Previous research with organizational employees demonstrates that identification is related to a number of desirable organizational outcomes such as job satisfaction and recruiting of others to seek employment with the organization (Mael, 1988). In a study of the alumni of a private college, identification with the alma mater was related to recruiting, financial contributions, attendance at fundraisers, and participation in alumni events (Mael, 1988). Similarly, identification with the platoon's supraunit and with the Army as a whole would be expected to elicit attitudes and behaviors which are beneficial for coordination of platoon efforts with those larger entities.

Scale composition and properties

The five-item Identification with a Psychological Group scale (IDPG; Mael, 1988) was utilized to measure organizational identification in both battalions. The IDPG scale has been shown to be a unidimensional measure with satisfactory psychometric properties in three previous usages (Mael, 1988). The present results supported continued confidence in the scale.

The scale was administered at Battalion A to squad members regarding their own IDPG and to squad leaders, platoon sergeants and platoon leaders regarding their own and their subordinates' IDPG. At Battalion B, the scale was administered to all respondents regarding only their own IDPG. The means, standard deviations, and reliability estimates/coefficient alpha (when sample size was sufficient) for each administration appear in Table 3. Reliability estimates ranged from .83 -.91 for five different samples.

Table 3

Organizational Identification
Scales and Statistics

- 1 When someone criticizes the Army, it feels like a personal insult.
- 2 I'm interested in what others say about the Army.
- 3 When I talk about the Army, I usually say we instead of they.
- 4 The Army's successes are my successes.
- 5 When someone praises the Army, it feels like a personal compliment.

Descriptive Statistics

Sample sizes:

	Battalion A	Battalion B
Squad Members(SM)	SM=195	SM=375
Squad Leaders(SL)	SL= 37	SL= 65
Platoon Sergeants(PS)	PS= 11	PS= 20
Platoon Leaders(PL)	PL= 09	PL= 14
Platoons	13	18

Variable	<u>Sample</u>	<u>Mean</u>	<u>SD</u>	<u>Alpha</u>
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Organizational identification (OID)

Battalion A:

Self	SM	3.46	.93	.83
Self	SL	3.92	.90	.89
Self	PS	4.40	.54	---
Self	PL	4.33	.51	---
Squad OID	SL	3.31	.78	.91
Platoon OID	PS	3.38	.45	---
Platoon OID	PL	4.04	.58	---

Battalion B:

Self	SM	3.26	.96	.84
Self	SL	3.51	.93	.87
Self	PS	3.96	.67	---
Self	PL	3.85	.69	---

(cont)

Table 3 (cont)

Analysis of variance: Differences between platoons

<u>Variable</u>	<u>Sample</u>	<u>Analysis of variance</u>
Battalion A:		
Org. identification	SM	$F_{(12,157)} = 1.14, ns$
Battalion B:		
Org. identification	SM	$F_{(17,335)} = 1.16, ns$

As with the motivation measures, mean scores on the IDPG were higher for those with higher rank. The one exception was that platoon sergeants expressed greater identification with the Army than platoon leaders.

In addition to evaluating their own Army identification, Battalion A leaders were also asked to rate their soldiers' identification with the Army. Leader evaluation of their own identification with the Army was consistently higher than evaluation of their squad or platoon members' identification.

Another interesting finding is the very high correlation between platoon leaders' own identification and their ratings of the platoon's identification ($r = .92$, $p < .001$). To a lesser extent, the same was true of the correlation between ratings of self- and platoon by platoon sergeants ($r = .51$, $p < .05$) and the correlation between ratings of self- and squad by squad leaders ($r = .70$, $p < .05$). By contrast, none of the correlations between the platoon members' self-ratings and leader ratings of the platoons was significant (SL $r = -.26$; PS $r = -.22$; PL $r = .38$).

Analysis of variance did not show significant differences between the platoons at either Battalion A or Battalion B in their degree of identification with the Army (Table 3). This is similar to the findings regarding job involvement and in contrast to previously mentioned between-unit differences in platoon cohesion. These findings are not surprising, given that all platoons are measured on their identification to the same entity. In addition, identification is related to individual personality differences (Mael, 1988) and thus may not always be amenable to platoon-wide influences.

LEADERSHIP SCALES

In the determinants program, the goal of leadership research is to determine those critical leadership attributes that influence leader performance in combat or simulated combat (i.e. JRTC), and then find the ways that they can be developed at home station. The current programmatic examination of leadership has been guided by Cognitive Resource Theory (CRT; Blades, 1986; Fiedler & Garcia, 1987;). CRT, as the label implies, accounts for the circumstances under which the intellectual or cognitive capabilities of a leader will impact upon the work unit's effectiveness. The theory assumes that leaders with greater cognitive capabilities have greater potential to perform (or lead others in the performance of) tasks requiring those capabilities. Several hypotheses are stated which view aspects of leader style and the leader's relationships with his own superiors as moderating the influence of leader cognitive capability on performance. In the following sections, those variables included in the hypothesized relationships (Blades, 1986; Fiedler & Garcia, 1987) are further explicated.

I. Initiating Structure

Conceptual background. The concepts of "initiating structure" and the complementary concept "consideration" (discussed in the next section) come from the factor analytic derivation of primary leader behaviors in the "Ohio State" studies. Initiating structure has been defined as including "...behavior in which the supervisor organizes and defines group activities... defines the role he expects each member to assume, assigns tasks, plans ahead, establishes ways of getting things done, and pushes for production." (Fleishman & Harris, 1962, p. 44). It is thus conceptualized as representing a task, rather than social, orientation towards leadership. Early research indicated that about 80% of the variance in leader behaviors can be explained by the initiating structure and consideration factors.

In spite of literally hundreds of studies, a clear relationship between leader structuring and successful group performance has not been established, and a number of pertinent moderator variables have been suggested (Hamner & Organ, 1978; Kerr, Schriesheim, Murphy & Stogdill, 1974). Nevertheless, initiating structure is generally perceived as a desirable component of leadership, and as such is included in the current research effort.

It should be noted that in the current research, it is typical leader behavior patterns and leadership "style" at home station that are being measured. The data are collected prior to the CTC rotations. Leaders who are structuring and considerate at home station may alter their styles under the various time and situational constraints associated with JRTC or actual combat. Thus, the data should not be treated as a stand-in for presumed behavior during actual field exercises. Rather, home station leader behavior should be analyzed for its effect on subsequent unit morale and performance.

Scale composition and properties. For the current research effort, the sheer number of variables under investigation made it impractical to use the full LBDQ, or even the full Initiating Structure and Consideration subscales. Thus, compact scales were written to capture the basic constructs with items appropriate to military, rather than civilian, leadership. A three-item scale representing initiating structure was developed for the Battalion A administration. For the Battalion B administration, the items were reevaluated, and a four-item scale was derived. Three of the items came from the Initiating Structure subscale of the Leader Behavior Description Questionnaire (LBDQ Form XII; Stogdill, 1963), and one was from the Role Assumption subscale of the same questionnaire. For all leadership scales, item anchors ranged from "almost always" to "almost never" on a five-point Likert-type scale, with 5 the highest score and 1 the lowest.

The scale was administered at both sites to squad members, who were asked to evaluate their squad leaders (Battalion A only), their platoon sergeants, and their platoon leaders. Squad leaders at both sites were asked to evaluate both their platoon sergeants and platoon leaders. At Battalion B only, platoon sergeants and platoon leaders rated both each other and their company commander. The descriptive statistics for these administrations are found in Table 4. Internal consistency estimates for the four-item form used with Battalion B ranged from .76-.82.

At both locations the squad members rated their platoon sergeants higher in initiating structure than their platoon leaders, although the differences were slight at Battalion A and more pronounced at Battalion B (Battalion A, 3.86 versus 3.70; Battalion B, 4.17 versus 3.67). The same was true of the ratings by the squad leaders (Battalion A, 3.70 versus 3.64; Battalion B, 4.10 versus 3.71). These results are not surprising, given the presumed role differentiation between platoon sergeants and platoon leaders in garrison. Conceivably, ratings which reflected involvement in structuring during JRTC or other field exercises might show a different pattern.

Ratings by platoon leaders and platoon sergeants of each other and of their company commanders were uniformly high, a finding which repeated itself with most of the leadership scales. There are two competing explanations for this phenomenon. One is that because organizational selection procedures lead to retention of only the more capable leaders, less variation in leader quality is to be expected as one gets higher in the chain of command. Two, leaders who are socialized into the organizational system are subject to normative constraints against giving negative ratings, especially when they could be career damaging. This is itself a reason why the use of peer evaluation as a performance appraisal method is unpopular among managers. Thus, even when the ratings are requested anonymously for research purposes, a hesitancy to rate harshly remains.

For both Battalion A and Battalion B, analysis of variance by platoon showed that platoon sergeants differed significantly from each other in the degree that they were perceived by their own squad members as structuring (Table 4). Similar between-platoon differences were found for platoon leaders as well.

II. Consideration

Conceptual background. Consideration is the complementary construct to initiating structure, which has been popularized by the Ohio State studies and numerous derivative and parallel typologies. Consideration has been defined by Fleishman and Harris (1962) as "behavior indicating mutual trust, respect and

Table 4

Leadership

I. Initiating Structure
Scale and Statistics

- 1 Maintains high standards of performance for our squad.
- 2 Insists that we follow standard operating procedures (SOP).
- 3 Knows Army-tactics and war-fighting.
- 4 Assigns group members to particular tasks.
- 5 Takes full charge when emergencies arise.

Descriptive Statistics

Sample sizes:

	Battalion A	Battalion B
Squad Members(SM)	SM=195	SM=375
Squad Leaders(SL)	SL= 37	SL= 65
Platoon Sergeants(PS)	PS= 11	PS= 20
Platoon Leaders(PL)	PL= 09	PL= 14
Platoons	13	18

Variable	<u>Sample</u>	<u>Mean</u>	<u>SD</u>	<u>Alpha</u>
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Initiating Structure(INS)

Battalion A:

SL INS	SM	3.74	.83	.73
PS INS	SM	3.86	.78	.77
PS INS	SL	3.70	.82	.82
PL INS	SM	3.70	.90	.80
PL INS	SL	3.64	.85	.79

Battalion B:

PS INS	SM	4.17	.77	.82
PS INS	SL	4.10	.64	.77
PS INS	PL	4.26	.57	---
PL INS	SM	3.67	.84	.79
PL INS	SL	3.71	.65	.76
PL INS	PS	4.23	.73	---
Co.C INS	PS	4.15	.94	---
Co.C INS	PL	4.16	.51	---

(cont)

Table 4 (cont)

Analysis of variance: Difference between platoons

<u>Variable</u>	<u>Sample</u>	<u>Analysis of variance</u>
SL INS	SM	$F_{(12,157)} = 2.44, p < .006$
PS INS	SM	$F_{(12,157)} = 2.88, p < .001$
PL INS	SM	$F_{(12,157)} = 2.16, p < .02$
Battalion B:		
PS INS	SM	$F_{(17,333)} = 4.94, p < .001$
PL INS	SM	$F_{(17,324)} = 2.98, p < .001$

certain warmth and rapport between the supervisor and his group (p. 43). While Fleishman and Harris equate consideration with a participative rather than autocratic decision-making style, most leadership theorists view decision-making style as a separate typology (Husband, 1985). The latter view was followed in the current research effort. Although support for a link between leader consideration and individual performance has not been uniform, a consistent relationship between leader consideration and satisfaction with leadership has been documented.

Scale construction and properties. A six-item scale measuring leader consideration was used at the Battalion A administration. Analysis of item-total correlations prior to the administration to Battalion B showed that the sixth item was redundant, resulting in the current five-item form. Two items each are taken from the Consideration and Integration subscales of the LBDQ.

The scale was administered at both sites to squad members, who were asked to evaluate their squad leaders (in Battalion A only), their platoon sergeants, and their platoon leaders. Squad leaders at both sites were asked to evaluate both their platoon sergeants and platoon leaders. Battalion B platoon sergeants and platoon leaders rated both each other and their company commander. The descriptive statistics for these administrations are found in Table 5. Internal consistency estimates for the scale were all .84 or higher.

Contrary to initiating structure, the ratings of platoon sergeants on consideration were not noticeably higher than those of platoon leaders, with the exception of the ratings by squad leaders in Battalion B (4.25 versus 3.91). Once again, though, the leader ratings in Battalion B were generally more elevated than those in Battalion A. One crucial difference between the two battalions may have been the differences in rater (i.e. squad member) tenure in the Army. The average squad member from Battalion A was in the Army longer than his counterpart in Battalion B. While 75% of the surveyed first term soldiers in Battalion A had been in the Army for over 28 months, only one-third of those in Battalion B had. Data from both sites showed a negative correlation between tenure in the Army and overall assessments of squad leaders, platoon sergeants, and platoon leaders. This is reflected in the difference in elevation of leader ratings between the two battalions in that the longer tenured battalion (Battalion A) gave lower leadership ratings.

A possible concern is the relationship between initiating structure and consideration. The two constructs were originally derived empirically from factor analysis which showed them to be orthogonal. However, extensive subsequent research has demonstrated an erratic pattern in their relationship. While the

Table 5

Leadership
II. Consideration Scale and Statistics

- 1 Treats us fairly.
- 2 Looks out for the welfare of his people.
- 3 Encourages us to work together as a team.
- 4 Is friendly and approachable.
- 5 Settles conflicts when they occur in the platoon.

Descriptive Statistics

Sample sizes:

	Battalion A	Battalion B
Squad Members(SM)	SM=195	SM=375
Squad Leaders(SL)	SL= 37	SL= 65
Platoon Sergeants(PS)	PS= 11	PS= 20
Platoon Leaders(PL)	PL= 09	PL= 14
Platoons	13	18

<u>Variable</u>	<u>Sample</u>	<u>Mean</u>	<u>SD</u>	<u>Alpha</u>
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Consideration (CON)

Battalion A:

SL CON	SM	3.59	.95	.91
PS CON	SM	3.52	.97	.92
PS CON	SL	3.62	.92	.92
PL CON	SM	3.34	1.05	.94
PL CON	SL	3.71	.85	.95

Battalion B:

PS CON	SM	3.86	1.02	.89
PS CON	SL	4.25	.70	.84
PS CON	PL	4.23	.85	---
PL CON	SM	3.78	.93	.89
PL CON	SL	3.91	.87	.85
PL CON	PS	4.38	.57	---
Co.C CON	PS	4.36	.76	---
Co.C CON	PL	4.25	.97	---

(cont)

Table 5 (cont)

Analysis of variance: Differences between platoons

<u>Variable</u>	<u>Sample</u>	<u>Analysis of variance</u>
SL CON	SM	$F_{(12,157)} = 1.78, p < .06$
PS CON	SM	$F_{(12,157)} = 3.96, p < .001$
PL CON	SM	$F_{(12,157)} = 9.60, p < .002$

Battalion B:

PS CON	SM	$F_{(17,333)} = 8.31, p < .001$
PL CON	SM	$F_{(17,324)} = 5.65, p < .001$

view that all good leaders should be high on both dimensions is the subject of debate (Blake & Mouton, 1964; Larson, Hunt & Osborn, 1977), the two factors are often correlated, sometimes to a great extent (Schriesheim, House & Kerr, 1976; Tracy, 1987; Weissenberg & Kavanagh, 1972). In the current studies, correlations between the two measures were high ($r_s = .57-.73$, $p < .001$ over eight correlations). It is possible that the two factors are especially intertwined in a military setting. In a study of 380 members of a cadet corps, Dobbins and Zaccaro (1986) obtained a correlation of .72 between the initiating structure and consideration subscales of the LBDQ Form XII. In another study of leadership at three levels in a military company, Sterling (1984) found intercorrelations of .77, .74 and .76 between ratings of leader task and interpersonal behavior of.

Another possibility is that the two factors actually measure a general factor of successful leadership, reflecting respondents' implicit theories of successful leadership (Rush, Thomas & Lord, 1977) rather than independent assessments of leaders' typical behavior patterns. Nevertheless, the two factors differed in their relative relationships to other survey constructs, justifying their continued inclusion as separate variables.

III. Participative Leadership

Conceptual background. Another important dimension of leadership is the decision-making style of the leader. Adherents of the Human Relations school of organizational behavior (Likert, 1967) have long proclaimed the value of leaders involving subordinates in decision-making regarding their work. Likert and others felt that a more democratic workplace would result not only in more worker satisfaction, but in better performance as well. However, others have challenged some of the claimed benefits of participative leadership and pointed out possible negative consequences (Anthony, 1978; Strauss, 1963). The characteristics of the leader, the led, and the situation must be taken into account before advocating the superiority of either style (Blades, 1986; Vroom & Yetton, 1973). Review of the research on leader decision-making style has also demonstrated mixed support for the benefits for a participative style (Locke & Schweiger, 1979). It is thus important to determine which decision-making style is most effective for company, squad, and platoon-level military leaders.

It must again be stressed that decision-making style at home station is being measured. Leaders who are participative at home station may consciously or unwittingly forego consensual decision making because of the time constraints and situational stressors associated with JRTC or actual combat. On the other hand, autocratic leaders at home station are unlikely to revert to participative leadership under stress. Thus, the data collected

prior to JRTC rotations should not be interpreted as presumed leader behavior during actual field exercises, although they may partially predict field behavior.

Scale composition and properties. A five-item scale was developed for the Battalion B administration to measure whether a leader's style was perceived as participative or autocratic. The items indicating a more participative style were coded as higher on the rating scale (i.e. the more participative, the more positive).

In the Battalion B administration, squad members were asked to evaluate their squad leaders, their platoon sergeants, and their platoon leaders. Each squad leader evaluated his platoon sergeant and platoon leader, and the platoon sergeant and platoon leader both evaluated each other and their company commander. Preliminary descriptive statistics demonstrated unacceptable alpha coefficients in each case. Factor analysis revealed that there were actually two distinct factors being measured. The first dealt with the delegation of authority, permission and encouragement to make decisions, and input into work process. This factor, made up of three items, represented what is traditionally thought of as participative leadership. A second factor, made up of two items, dealt with the tendency of some leaders to personally supervise all details of work and constantly check up on subordinate performance, commonly referred to as "micromanagement".

In theory, "micromanagement" would fit the general schema of the autocratic rather than democratic leader. A leader who delegates responsibility would be expected to trust subordinates to take their responsibilities seriously. In the current sample, however, the two sets of items were factorially distinct, and intercorrelations between the two scales were primarily nonsignificant or negative (squad members rating squad leaders, $r = .00$; squad members rating platoon sergeants, $r = -.22$, $p < .001$; squad members rating platoon leaders, $r = -.30$, $p < .001$; squad leaders rating platoon sergeants, $r = -.05$, ns; squad leaders rating platoon leaders, $r = .62$, $p < .001$). Moreover, both participative leadership and micromanaging were generally related to the other positive evaluations of leaders, such as high consideration, high initiating structure, and low boss stress. It thus appears that in the context of this squad and platoon level sample, squad members evaluate a conceptually hybrid style as effective leadership. The highly-rated leader gives subordinates leeway on decisions which affect them but also takes a very hands-on approach to supervising their accomplishment of the work.

The descriptive statistics for the two subscales which were identified by the factor analysis are found in Table 6. Alpha coefficients for participation ranged from .75 - .80, while alpha coefficients for the two-item micromanagement scale ranged from

Table 6

Leadership

III. Participative Leadership Scales and Statistics

A. Participative Leadership

- 1 Lets us help with planning the mission.
- 2 Lets us have a lot of say in how we do our work.
- 3 Permits us to use our own judgement in solving problems.

B. Micromanagement

- 1 Personally supervises every detail of the platoon's work. (R)
- 2 Constantly checks up on what the platoon members are doing. (R)

Descriptive Statistics

Sample sizes:

	Battalion A	Battalion B
Squad Members(SM)	SM=195	SM=375
Squad Leaders(SL)	SL= 37	SL= 65
Platoon Sergeants(PS)	PS= 11	PS= 20
Platoon Leaders(PL)	PL= 09	PL= 14
Platoons	13	18

<u>Variable</u>	<u>Sample</u>	<u>Mean</u>	<u>SD</u>	<u>Alpha</u>
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Participative leadership(PRT)

Battalion B:

SL PRT	SM	2.95	1.09	.80
PS PRT	SM	2.77	1.11	.80
PL PRT	SM	2.87	1.02	.78
PS PRT	SL	4.04	.93	.83
PL PRT	SL	3.51	.93	.75
PL PRT	PS	4.15	.74	---
Co. C PRT	PS	3.98	.90	---
PS PRT	PL	3.44	.60	---
Co. C PRT	PL	4.55	.45	---

(cont)

Table 6 (cont)

<u>Variable</u>	<u>Sample</u>	<u>Mean</u>	<u>SD</u>	<u>Alpha</u>
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Micromanagement (MICRO)

Battalion B:

SL MICRO	SM	2.71	1.10	.80
PS MICRO	SM	2.88	1.09	.70
PL MICRO	SM	3.30	1.08	.75
PS MICRO	SL	3.09	1.12	.92
PL MICRO	SL	3.33	1.17	.82
PL MICRO	PS	3.28	.84	---
CC MICRO	PS	3.88	.97	---
PS MICRO	PL	3.35	.80	---
CC MICRO	PL	4.27	.60	---

Analysis of variance: Difference between platoons

<u>Variable</u>	<u>Sample</u>	<u>Analysis of variance</u>
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SL PRT	SM	$F_{(17,334)} = 1.03, ns$
PS PRT	SM	$F_{(17,333)} = 1.93, p < .02$
PL PRT	SM	$F_{(17,324)} = 1.75, p < .05$
SL MICRO	SM	$F_{(17,334)} = 1.03, ns$
PS MICRO	SM	$F_{(17,333)} = 1.93, p < .05$
PL MICRO	SM	$F_{(17,324)} = 1.98, p < .05$

.75 - .92. Generally, the higher the rank of the respondent, the more he rated his superiors as participative and the less he rated them as micromanaging. A possible reason is that soldiers who are themselves leaders would be presumed to have demonstrated responsible behavior earlier in their careers. Therefore, they would logically merit and receive more decision input and less close supervision. However, the extremely high means (and comparatively small standard deviations) in ratings by platoon leaders of their company commanders once again raise suspicions of socially desirable ratings.

IV. Boss Stress

Conceptual background. The current research effort includes a construct from the work of Fiedler (Fiedler & Garcia, 1987) referred to as "boss stress". In Fiedler's terminology, "boss stress" refers to stress on a leader from one or more of his superiors. The stress is significant in that it indirectly constrains the leader's ability to fill his leadership role. For example, the leader may suffer from impaired creativity and decision-making capability.

Fiedler's concept is part of a very recent trend in leadership research to acknowledge a leader's behavior as potentially destructive, rather than merely effective or ineffective. The vast majority of research devoted to leader characteristics, behaviors, and styles has focused on positive attributes: to what extent the successful leader is smarter, taller, kinder, more considerate, or more participative. Minimal research has focused on the degree to which specific negative leader traits or behaviors in leaders impede successful employee performance. Only recently has the literature included systematic discussions of "neurotic leadership styles" (Kets de Vries & Miller, 1986) and typologies of "problem bosses" (Grothe & Wylie, 1987).

It cannot be assumed that the inverses of leader styles typically coded as positive are synonymous with actively destructive behaviors. For example, one could only infer from a low score on consideration that the leader does not typically express concern or "go to bat" for subordinates. However, the leader who is also abusive and subjects subordinates to ambiguous directions and role conflicts may not be reflected in a low score on any LBDQ-type scale. Moreover, it is logically possible for the same leader to engage in positive behaviors, yet also subject subordinates to great stress in the process. Hence, inclusion of a "boss stress" scale is not redundant with aforementioned scales.

In the current research effort, "boss stress" is also used in a different context than that originally mentioned by Fiedler. In Fiedler's usage, boss stress refers to stress on a leader

which hampers his own cognitive resources; however, it is not assumed that he passes along the same type of stress to his own subordinates. In the current usage, boss stress also refers to stress put on subordinates by a leader. The dependent variable is the degree to which that stress constrains their performance as subordinates and depletes their motivation and job satisfaction. In actuality, the currently developed scale allows for data analysis from both perspectives.

Scale composition and properties. A five-item scale was developed for administration to Battalion B. Three items were taken from Potter & Fiedler (1981), and two others were written for the current scale. The items were coded so that frequency of stress-inducing behaviors by the leader was reverse-scored. Thus, a high-stress boss would receive a low score, and a low-stress boss would receive a high one. This was based on the assumption that better leaders would generally put their subordinates under less stress.

The scale was administered to Battalion B only. Squad members were asked to evaluate their squad leaders, their platoon sergeants, and their platoon leaders. Each squad leader evaluated his platoon sergeant and platoon leader; platoon sergeants evaluated their platoon leaders; and platoon leaders evaluated their company commanders.

The descriptive statistics in Table 7 indicate that the scale demonstrated acceptable alpha coefficients (.75 -.82) in each case. The scale was factorially unidimensional as well.

There were two noteworthy findings regarding comparative ratings with this scale. One is that unlike previous leadership ratings, the ratings of company commanders by platoon leaders were not demonstrably inflated compared to other ratings of boss stress. The other is that squad leaders, when rating their platoon leaders, cited a greater frequency of stress-inducing behaviors (mean 2.40) than any other rater-ratee pair (range of 3.37 - 3.77).

V. Upward Influence

Conceptual background. The aforementioned aspects of leadership deal with the interactions between a leader and his subordinates. In a small organization, where the leader is the final arbiter of decisions and controls all resources, the superior-subordinate relationship may be sufficient to appraise quality of leadership. In large organizations such as the Army, however, the squad or platoon leader's position is embedded within concentric circles of greater authority. Leaders in large organizations may need to compete for scarce organizational resources and must develop patrons and allies in positions of greater authority. For this reason, the upward influence of the

Table 7
Leadership

IV. Boss Stress Scales and Statistics

- 1 Becomes unpleasant with me when he is under pressure. (R)
- 2 Is constantly changing the directions he gives to me. (R)
- 3 Does not tell me what he expects from me. (R)
- 4 Shows favoritism within the platoon. (R)
- 5 He expects me to do too much in too little time. (R)

Descriptive Statistics

Sample sizes:

	Battalion A	Battalion B
Squad Members(SM)	SM=195	SM=375
Squad Leaders(SL)	SL= 37	SL= 65
Platoon Sergeants(PS)	PS= 11	PS= 20
Platoon Leaders(PL)	PL= 09	PL= 14
Platoons	13	18

<u>Variable</u>	<u>Sample</u>	<u>Mean</u>	<u>SD</u>	<u>Alpha</u>
<u>Boss Stress</u>				

Battalion B:

SL	SM	3.37	.96	.80
PS	SM	3.38	.92	.75
PL	SM	3.50	.92	.81
PS	SL	3.59	.99	.82
PL	SL	2.40	.95	.81
PL	PS	3.77	.80	---
Co. C	PL	3.66	.85	---

Analysis of variance: Difference between platoons

<u>Variable</u>	<u>Sample</u>	<u>Analysis of variance</u>
SL stress	SM	$F_{(17,334)} = 2.34, p < .002$
PS stress	SM	$F_{(17,333)} = 5.67, p < .001$
PL stress	SM	$F_{(17,333)} = 2.61, p < .001$

leader has been viewed by leadership researchers as another possible dimension of successful leadership and unit performance (Fiedler, 1967; Mulder, 1971).

Thus, Miner (1978) has included the willingness to cultivate positive relationships with superiors among his six managerial role prescriptions. The LBDQ-XII Superior Orientation subscale which deals with the quality of a leader's relationships and influence with his superiors also reflects the presumed importance of leader upward influence. Similarly, Kerr, Schriesheim, and Murphy (1974) identified leader upward influence as a possible moderator of the relationship between leader consideration and initiating structure and employee satisfaction or performance. In the current research project, leader upward influence has been included as an independent predictor of leader effectiveness and unit performance.

Scale composition and properties. A six-item upward influence scale was developed for the Battalion B administration. It comprises four items from the Superior Orientation subscale of the LBDQ-XII as well as two additional items. It was not felt that all squad members or squad leaders had a sufficient basis for accurate knowledge of their leaders' relationships with more senior leaders. Therefore, the scale was only used with platoon sergeants (rating platoon leader upward influence) and platoon leaders (rating both their platoon sergeants and company commanders). Means and standard deviations for the leader upward influence scale appear in Table 8. Unfortunately, the resultant small sample size limited the ability to establish psychometric properties such as scale reliability and factorial dimensionality. Nevertheless, because of the importance of the construct and the fact that the items are primarily from an established scale, the scale will continue to be used as it appears.

CONCLUSION

A series of measurement scales in the areas of motivation, cohesion, identification, and leadership were adapted and/or written for use in the determinants research program. Two pilot administrations were undertaken in order to determine the psychometric properties of the scales. Based on the criteria listed at the beginning of this report, the effort was successful. The first criterion, that the scales be psychometrically sound, was satisfied. Distributions were within a satisfactory range, with the exception of some of the leadership ratings by officers, which were possibly skewed due to leniency effects. Internal consistency estimates were all at an acceptable level, the only exceptions being the since-revised job involvement scale and the upward influence scale for which no alpha coefficient was computed. The second criterion, that the scales be concise, was accomplished. None of the current scales is longer than six

Table 8

Leadership

V. Upward Influence Scale and References

- 1 Gets along well with the people above him.
- 2 Keeps the platoon in good standing with higher authorities.
- 3 His word carries weight with superiors.
- 4 Gets what he asks for from his superiors.
- 5 Is well respected by fellow leaders.
- 6 Is considered someone with a real future in the Army.

Descriptive Statistics

Sample sizes:

	Battalion A	Battalion B
Squad Members(SM)	SM=195	SM=375
Squad Leaders(SL)	SL= 37	SL= 65
Platoon Sergeants(PS)	PS= 11	PS= 20
Platoon Leaders(PL)	PL= 09	PL= 14
Platoons	13	18

Variable	<u>Sample</u>	<u>Mean</u>	<u>SD</u>	<u>Alpha</u>
<u>Leader Upward Influence</u>				
PL	PS	3.93	.63	---
PS	PL	4.27	.74	---
Cq. C	PL	4.25	.97	---

items. The current scales are in some cases considerably shorter than their source scales, yet still retain reliability and clear-cut factorial structure. The third criterion was that those items and scales originally used in the private sector be adapted to the correct context and terminology of the military. After review by subject matter experts, including both social scientists and military personnel, this goal appears to have been accomplished. Finally, pre-administration and post-rotation interviews at both Battalion A and Battalion B revealed no concerns or suspicions about the survey as a whole. This provides evidence of face validity.

As the determinants program unfolds, there may be further item and scale additions, deletions, and emendations. In particular, requirements for change may become evident as these measures are linked to data on unit CTC performance. Accommodation of other variables in the program may require further paring of scales. Additional criteria may also be imposed on the process by participants in and users of the research. Nevertheless, the effort documented in this paper, based on accepted statistical procedures with a sample of over 725 soldiers, allows for confidence in the measures. The results support continuance with the actual collection of predictor data for the determinants program.

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